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A REVIEW OF WORKING CAPITAL MANAGEMENT: A BIBLIOMETRIC STUDY FOR FUTURE DIRECTIONS

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ABSTRACT

Purpose: This study's goal is to analyze working capital management bibliometrically. This research covers the nation's scientific output between 2003 and 2024, including the quantity of articles published, the most influential papers, the most creative authors, and the most influential journals. In addition, one of the study's goals has been to identify gaps by utilizing various keywords.

Design/ Methodology: The study found 125 documents that were obtained from the Scopus database and analyzed bibliometrically using VosViewer and R-Studio.

Findings: With 23 publications, 2023 was the most productive year. Ahsan and Minhas Akbar were the most creative writers during that time. United Kingdom ranked first among influential countries, with 258 citations, followed by the Portugal . The publication that received the most citations was "Is Working Capital Management Value: enhancing Evidence from firm performance." In addition, the writers discovered that there was no keyword linkage to identify the research gap.

Research Implication: It provided guidance on the present status of the study to upcoming researchers and business owners.

KEYWORDS: Working Capital, Working Capital Management, Bibiometric Analysis

INTRODUCTION

Finance works like blood for any enterprise in today's era. For instance, if there is excess blood in a body, it has to be removed or drained and if there is less blood, it has to be put out of the body. Similarly, finance also has to be managed in the enterprise. Working Capital is an important part of these inevitable decisions (i.e. investment decisions) of finance decisions. Working Capital Management refers to managing finances related to day-to-day activities which include short-term assets (inventories, receivables, payables, and cash). Effective management of working capital components, or optimal working capital management, will supply the liquidity needed to finance the business's activities automatically (Aldubhani et al., 2022). Corporate managers should place a high priority on working capital management to boost business performance. Better governance will facilitate better-working capital management, which will boost performance overall (Naz et al., 2022).

Working capital is the money involved in a business's daily operations, according to PwC UK's Working Capital Report 2019–20: Creating Value through Working Capital. The analysis verified that, despite a more volatile international trade environment, regional differences in working capital performance still exist. These differences are primarily caused by differences in payment practices, cultural norms, and cash maturity levels (PwC, 2020).

Through concentrated efforts to optimize working capital operations, businesses can gain a competitive edge over their peers as well as long-term value (Deloitte research, 2023).

According to the EY Report from 2021, businesses must take a systematic approach to reducing working capital management problems, particularly in times of economic uncertainty. According to the report, Indian enterprises should prioritize optimizing their working capital. Working capital management, or the efficient administration of a company's current assets, is always essential to its survival and profitability (Aminu & Zainudin, 2015).

In addition to discussing the significance of working capital, corporate finance managers also need to take into account the impact of liquidity on profitability, as the company's limited cash reserves must be adequately utilized for investments. Investors might take into account funding decision elements related to debt percentage when choosing their financial strategy (Bintara, 2020).

This shows how important working capital management is for any firm as it is related to profitability (Deloof, 2003) (Lazaridis & Tryfonidis, 2006) (Raheman & Nasr, 2007) (Mathuva, 2009) (Gill et al., 2010). It is crucial to understand working capital management and the challenges that businesses face to manage working capital efficiently by going over the many components of working capital management.

To further this understanding in way that advances knowledge,

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this paper wants to perform a literature review. In particular, this paper focuses on:

1. To know the most influential journal, articles, authors through bibliometric analysis.
2. To inform/ suggest the aspiring researchers about fresh directions.
3. To identify the important keywords those were mostly used by the researchers.

2. BIBLIOMETRIC RESEARCH METHOD

In recent times, Bibliometrics analysis has gained significant traction in the research community (Khan et al., 2021; Donthu et al., 2021). This growth in popularity can be ascribed to the progress, availability, and development of Bibliometrics tools such as Gephi, R studio, and VOSviewer along with electronic research databases including Scopus and Web of Science, In this study, bibliometric analysis has been done to review the research articles by using the keywords "working and capital and working and capital and management". The paper also limits the keywords to "working capital", working capital management", "CCC". The Scopus database has been used for this paper as it includes double blind paper reviewed journals. For analysis purpose, R studio and VOSViewer software used for the Bibliometrics analysis.

2.1 Selection Criterion

The study discover 125 documents retrived from Scopus database. While selecting the 125 documents different filtering phases was used in which more than 1600 documents were selected in the initial stage. The filtering was done on the basis of years, subject, document type and language in which only English language was selected and keywords, source type and open access also limits for the selection criterion.

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( working AND capital AND management) AND PUBYEAR > 2000 AND PUBYEAR < 2025 AND (LIMIT-
TO ( SUBJAREA , "BUSI") OR LIMIT-TO ( SUBJAREA , "ECON") OR LIMIT-
TO ( SUBJAREA , "SOCI")) AND (LIMIT-TO ( DOCTYPE , "ar")) AND (LIMIT-
TO ( LANGUAGE , "English")) AND (LIMIT-TO ( EXACTKEYWORD , "Working Capital
Management") OR LIMIT-TO ( EXACTKEYWORD , "Cash Conversion Cycle") OR LIMIT-
TO ( EXACTKEYWORD , "Working Capital")) AND (LIMIT-TO ( SRCTYPE , "j")) AND ( LIMIT-
TO ( OA , "all"))
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Note: screenshot of filter criterion (Scopus Database)

Phase	Filtering Process	Accepted
1	Initial stage	1663
2.	Year range (2003-2024)	671
	Subject filter(business, management and accounting, economics, econometrics and finance and social science)	476
3.	Document type (articles only)	408
4.	Language (English only)	408
5.	Keywords (working capital management, CCC, working capital,)	342
6.	Source Type(journal)	339
7.	Access type(open access)	125

Note: CCC= Cash Conversion Cycle.

Table 1: Bibliographies Data Retrieval Process (on 1st June 2024)

3.RESULTS AND DISCUSSION

3.1 Number of Articles over the years

Using Bibliometrics analysis, the study's 125 documents were chosen from the Scopus database. The number of articles across time revealed that the greatest number of papers were published in 2023, with the fewest being in 2004, 2005, 2006, 2007, and 2008, when there were none at all.

Year	Articles
2003	1
2004	0
2005	0
2006	0
2007	0
2008	0
2009	1
2010	1
2011	1
2012	1
2013	4
2014	2
2015	4
2016	5
2017	6
2018	12
2019	17
2020	12
2021	9
2022	20
2023	22
2024	7

Table 2: Number of Articles over the years

Paper	DOI	Total Citations	TC per Year
Aktas N, 2015, J Corp Financ	10.1016/j.jcorpfin.2014.12.008	271	27.1
Ding S, 2013, J Bank Financ	10.1016/j.jbankfin.2012.03.025	219	18.25
Pais Ma, 2015, Int J Manage Finan	10.1108/IJMF-11-2014-0170	115	11.5
Yazdanfar D, 2014, Int J Manage Finan	10.1108/IJMF-12-2013-0137	80	7.27272727
Zheng X, 2022, Econ Anal Policy	10.1016/j.eap.2022.08.006	72	24
Wang Z, 2020, Sustainability	10.3390/su12041661	52	10.4
Boțoc C, 2017, J Bus Econ Manage	10.3846/16111699.2017.1402362	47	5.875
Pirttilä M, 2020, Int J Prod Econ	10.1016/j.ijpe.2019.08.009	40	8

Anton Sg, 2021, J Risk Financ Manag	10.3390/jrfm 14010009	40	10

Note (s): DOI= Digital Object Identifier; TC= Total Citations.

Table 3: Top 10 Most influential document for the period of 2003-2024(Scopus Database)

The most influential documents is listed in Table 3 along with the DOI, years, citation counts, and citations per year. Aktas et al. (2015)'s article "Is Working Capital Management Value: enhancing Evidence from firm performance and investments" has the highest citation count (271), followed by Ding et al. (2013)'s article "The Investment and Financing constraints in China: Does Working Capital Management make a difference?" (219). The paper "Working Capital Management and SMEs Profitability: Portuguese Evidence" (Pais & Gama, 2015) with 115 citations took third place.

Source	h_ index	g_ index	m_index	TC	NP	PY_ start
Cogent Business And Management	3	5	0.5	59	5	2019
Investment Management And Financial Innovations	3	5	0.333333333	31	5	2016
Risks	3	4	0.75	35	4	2021
Cogent Economics And Finance	2	2	0.666666667	25	2	2022
International Journal of Banking, Accounting And Finance	2	2	0.285714286	19	2	2018
International Journal of Financial Research	2	3	0.333333333	12	3	2019
International Journal of Managerial Finance	2	2	0.181818182	195	2	2014
International Journal of Production Economics	2	2	0.222222222	63	2	2016
Journal of Business Economics And Management	2	2	0.25	58	2	2017

Note(s): TC= Total citations; NP= Net Production; PY= Production Year.

Table 4: Top 10 most influential Sources for the period of 2003-2024(Scopus Database)

The table 4 depicts about the top most influential sources with h index, m index , g index and total citations. The h-index, often known as the "Hirsch index," is a well-known author-level research indicator. Its value indicates the proportion of articles with at least h citations. According to this study Cogent Business and Management, Investment Management and Financial innovations and Risk secured first with h value 3. The h-index's insensitivity to highly cited papers beyond the "h" value is one of its main shortcomings.

Leo Egghe introduced the "g-index" in 2006 as an enhancement to the "the h-index." "The largest number such that the top 'g' articles received together at least g2 citations" is the definition of the g-index. The order in which the citations are evaluated is downward. So, Cogent Business and Management and Investment Management and Financial innovations took first positions with 5 value.

The m value represents a time correction to the h index, where m = h/y. Hirsch claims that m is a useful tool for comparing scientists with varying levels of seniority since it serves as a "indicator of the successfulness of a scientist." As an indicator of "scientific quality," the m value has the advantage of being career duration compensated, which sets it apart from the h index. Because m-index is also the extension of h-index that's why this study considers the m-index and interpret that Cogent Business and Management and Risks showed remarkable performance during selected period.

Author	h_ index	g_ index	m_index	TC	NP	PY_ start
Akbar A	3	3	0.6	83	3	2020
Akbar M	3	3	0.6	83	3	2020
Habib Am	3	3	1	53	3	2022
Kärri T	3	4	0.25	67	4	2013
Marttonen S	3	3	0.25	27	3	2013
Abdul-Hamid Ma	2	2	0.25	18	2	2017
Anton Sg	2	2	0.25	87	2	2017
Atahau Adr	2	2	0.33333333	42	2	2019
Kayani Un	2	2	1	13	2	2023
Korent D	2	2	0.5	5	2	2021
Michalski G	2	2	0.125	16	2	2009
Nastiti Pky	2	2	0.33333333	42	2	2019
Sawandi N	2	2	0.25	18	2	2017
Simon S	2	2	0.25	18	2	2017
Supramono S	2	2	0.33333333	42	2	2019
Tingbani I	2	3	0.28571429	20	3	2018
Viskari S	2	2	0.16666667	9	2	2013
Abiad M	1	1	0.33333333	10	1	2022
Abubakar A	1	1	0.125	13	1	2017

Note (s): TC= Total Citations; NP= Net Production; PY=Production Year.

Table 5: Top 20 most inventive authors for the period of 2003-2024 (Scopus Database)

Table 5 lists the writers who were most creative between 2003 and 2024 based on their h-, m-, and g-indices as well as their

overall number of citations and articles produced within the chosen time frame. Table No. 4.3 has already covered these indices. Akbar A, Akbar M, Habib AM, Karrit, and Marttonen S held the top spot with a value of 3 according to the h-index. Among the other authors, Habib AM, Karrit, Akbar A, Akbar M, and Kayani Un had the highest scores for the m- and g-indices, which are extensions of the h-index.

Although Anton SG appears to have the most citations, these indices are based on established scholarly metrics, therefore in order to determine which author is the most profiled; we take these indices into consideration.

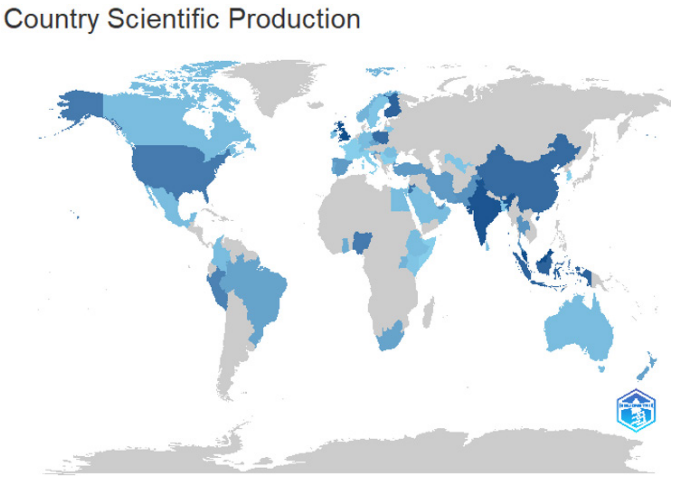


Figure 1: Number of articles produced by the countries.

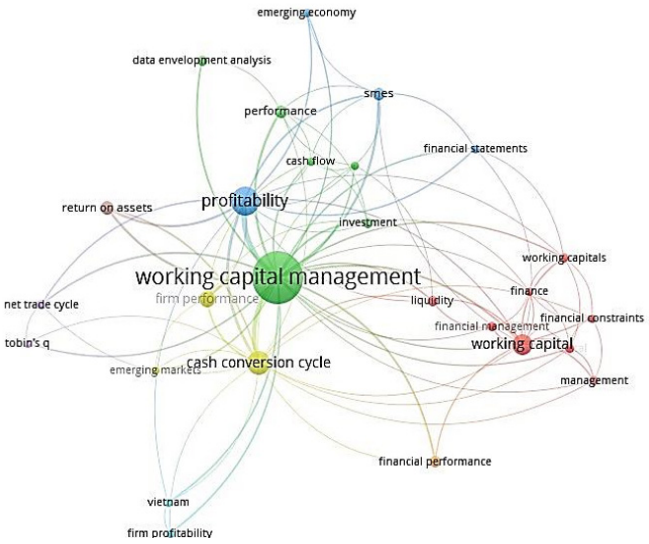
The number of research articles produced by each country for the chosen period (2003–2024) is displayed in Figure 1. The figure indicates that countries with darker blue hues are more productive in terms of scientific production. Malaysia, the United Kingdom, and India published more articles about working capital management, the survey found.

Country	TC	Average Article Citations
United Kingdom	258	51.6
Portugal	139	69.5
China	88	17.6
Romania	87	43.5
Pakistan	82	41
Sweden	80	80
Finland	61	20.3
Egypt	53	17.7
Indonesia	46	15.3
Poland	42	8.4
Brazil	41	20.5
Malaysia	37	6.2
France	36	36
Belgium	23	23
Iran	23	7.7
United Arab Emirates	22	11
Uganda	21	21
Uzbekistan	20	20
South Africa	17	8.5

Note: TC= Total Citations.

Table 6: Top 20 most cited countries for the period of 2003-2024(Scopus Database)

The world's most and least cited countries over the chosen time period are displayed in the table. According to this table, China comes in third, followed by Portugal and the United Kingdom as the nation with the most overall citations. However, Sweden has the greatest average citations, followed by the United Kingdom, when looking at citation counts. This indicates that the majority of the working capital management-related publications being cited are from Sweden, the United Kingdom, and China.



Note: Green nodes= working capital management, cash flow, investment, performance and data development analysis; Blue nodes= profitability, firms profitability, financial statements ; yellow nodes= cash conversion cycle, firms performance and emerging markets; Purple nodes= net trade cycle, tobin q and Red nodes= working capital, financial management, liquidity, management, finance and financial constraints.

Figure 2: Most frequently used keywords during selected period 2003-2024 (Scopus Database)

VosViewer have been used to create this figure. This figure shows which are the most frequently used topics or words that have been relevant to working Capital Management in the selected period. Circles that being held are called nodes; the bigger the nodes, the more times the title has been used. Business must understand how to manage their present assets and liabilities ; there are differences in how to manage each of its essential components and effective management of every component has an impact on the profitability of businesses(Aldubhani et al., 2022). Because it primarily deals with working capital management, the profitability node looks a lot like it. The cash conversion cycle is the title that appears the most frequently, after the profitability and working capital management. The connections that have been established between terms or subjects will aid in determining the future paths that this field

will take.

4. Discussion And Future Directions

This research article discusses significance of working capital management by using bibliometric analysis. It is evident from the research above U.K. topped with highest citations on this subject. It can be inferred further that scholar can easily access to top cited journals, articles, authors etc. Even future scholars easily detect the gap the research study after review this paper.

The study completed by using R studio and VosViewer and retrieved 125 documents served as the bases for the review. The survey indicates that 22 articles were published in 2023 which is highest among the selected period. Subsequently, the analysis showed that, with 271 citations "Is Working Capital Management Value: enhancing Evidence from firm performance and investments" came out as most influential research article. Cogent Business and Management whose H and G indices are the highest along with citations proved as most influential source within a certain period. When it comes to authors, Akbar A is regarded as the significant based on G and H indices as well as the highest citations. In case of country scientific production, Malaysia has the highest production and nation with highest citations all over the world is U.K. followed by Portugal.

An attempt has been made to indentify the gap based on keywords in this study. The larger the nodes or circles represents that most frequently used keywords. And the link indicates keywords associated with each other and based on this information and by connecting the phrases that are not associated with one another, we can identify the future gap. The study revealed that Working Capital Management is the most frequently associated issue with nearly all of the keywords as per figure 2. Nonetheless, certain words or topics are not related to one another such as Cash Conversion Cycle yet not connected with cash flow, smes, Financial management, investment, emerging economies, finance and data development analysis. Apart from this, tobin q which is many time used as used as proxy of the profitability yet not connected with liquidity issues, financial constraints and cash flow issue. As a results, it highlights a research vacuum that can be filled in the future by utilising these terms.

5. IMPLICATION OF THE STUDY

Present study helpful for entrepreneurs, academicians and research scholars. Because through this study they will get all the information on a single platform like top authors, prominent sources, top cited articles and emerging trends.

6. LIMITATIONS OF THE STUDY

This study is limited to the Bibliometric analysis of data extracted from only Scopus database. Therefore, the future study could be done using combined bibliographic data from Scopus, Web of Science, PubMed, Emerald etc.

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